

REMARKS/ARGUMENTS

By the foregoing amendment, claims 1 and 2 have been cancelled. Claims 20 through 25 have been added and the dependency of claims 3-19 have been changed.

The rejection of the claims as unpatentable over Japanese patent publication 2605841 in view of Potter U.S. patent No. 3,842,945 is respectfully traversed. Each of the claims as now presented include a silicone-based unvulcanized rubber as a damping medium interposed between a pair of members (or in the case of claim 23 a housing and a gap forming member) movable relative to each other. Additionally, the silicone-based unvulcanized rubber is in contact with each surface of the pair of members without being bonded to those members. The unvulcanized rubber is plastically deformed when the pair of members move relative to one another whereby the relative moving energy between the pair of members is absorbed through the plastic deformation of the silicon-based unvulcanized rubber. One of the principal advantages of a damper formed of silicon-based unvulcanized rubber is its capacity for assembly and disassembly during production and maintenance since the silicon-based unvulcanized rubber is not bonded to the pair of members. Another distinct benefit is that the damper is reliable over a long period of time since there is no bonded portion on contact surfaces between the rubber and the pair of members. Conventionally, bonds between damping material and associated members deteriorate over time causing the bonded members to separate one from the other.

The Japanese publication 2605841 discloses a rotary damper for a seat comprising a pair of relatively movable members in viscous material as a damping medium, for example silicon fluid having a dynamic viscosity far over 500,000 centistoke, the viscous material being interposed between the movable members. This Japanese publication does not disclose or suggest silicon-based unvulcanized rubber as a damping medium.

U.S. patent No. 3,842,945 to Potter discloses a viscoelastic damper including an elongate rectangular body 50 which forms the damping medium. Potter discloses the solid viscoelastic material to comprise a rubber such as silicon rubber. Potter does not disclose an unvulcanized silicone-based rubber. Moreover Potter states that the web portion 52a of the elongate inner plate 52 is bonded to the body 50 of the viscoelastic material. Further the outer plates 56 are bonded to the body 50 of the viscoelastic material (column 3, lines 28-47 of Potter). Thus, Potter not only fails to disclose unvulcanized rubber but requires the disclosed silicone rubber to be bonded to the inner web 52 and the outer plates 56. Further, while the Examiner states it would have been obvious to use unvulcanized silicone rubber there is no basis in the prior art for that statement and even assuming the obviousness of using unvulcanized rubber which applicants contest the claimed construction does not result in light of the nonbonded nature of the unvulcanized rubber and the pair of members.

The rejection of claims 3-5 and 11 as unpatentable over Potter is respectfully traversed for the reasons noted above.

The rejection of claims 3-11 as unpatentable over Schimoda in view of Potter or Thorn is respectfully traversed. Shimoda U.S. patent no. 5,161,655 discloses a damper having a plastic deformation member formed of a super plastic material such as lead alloy, tin alloy or zinc alloy etc. Note in Thorn that the resilient friction member is fixedly mounted to the smaller dimensioned portion of the shaft by a suitable bonding process (see column 4, line 36-57 and also column 5, lines 23 et seq.). None of the applied references disclose unvulcanized rubber as the damping medium. Both Potter and Thorn require the damping medium to be bonded to one or more of the surfaces. Still further the damper of claim 23 distinguishes by requiring the gap forming member to comprise the hole portion into which the engaging tip portion of the shaft is inserted to engage with the gap forming member. Thus the three applied references do not disclose the gap forming member having a hole portion for receiving the tip portion of the shaft. To further illustrate and explain the present invention, applicants enclose four colored drawings of an embodiment of the invention which corresponds to Figure 6. The final picture 4/4 discloses the annular plate portion and the hollow shaft about which the unvulcanized silicone rubber is disposed.

KOJIMA et al
Appl. No. 10/074,235
January 7, 2004

Accordingly, applicants believe the application is now in condition for allowance and early notification of the allowance thereof is respectfully requested.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: Richard Besha
Richard G. Besha
Reg. No. 22,770

RGB:pfc
1100 North Glebe Road, 8th Floor
Arlington, VA 22201-4714
Telephone: (703) 816-4000
Facsimile: (703) 816-4100